

PATENT CLAIMS:

1. A staircase lift for transporting a disabled person between floors, including at least one guide rail extending substantially parallel to a stairway,
5 a moveable carrier frame suspended from the guide rail means including carrier support means, and
drive means of a rack and pinion type drive for displacement of the carrier frame along the guide rail, in which the vertically disposed pinion engaging the rack is provided on the lower side of the guide rail,
10 characterised in that
the at least one guide rail includes internal support surfaces which may be engaged by the carrier support means.
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2. A staircase lift according to claim 1, wherein the drive means comprises a first and second set of guiding means pivotally arranged one behind the other on each side of the pinion drive wheel in the frame.
- 20 3. A staircase lift according to claim 2, wherein the carrier support means include at least one carrier member arranged above the pinion drive wheel substantially in a traction plane and with an axis of rotation which is substantially perpendicular to the direction of travel, and wherein each of the first and second set of guiding means include an essentially vertically arranged carrier member and a top and bottom
25 guiding member having a rotary axis substantially perpendicular to that of the carrier member.
4. A staircase lift according to claim 2 or 3, wherein the pivotally arranged first and second guiding means each include a movement control lever with a first end where
30 at least one set of guiding members are mounted, a second end at which point the first and second movement control levers are joined to each other by a universal joint, said universal joint being substantially in the traction plane.

5. A staircase lift according to claim 4, wherein the movement control member is pivotally mounted to the carrier frame at an equal distance from the side rails on each side thereof.

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6. A staircase lift according to claim 3 to 5, wherein the guide rail has a reverse U-shape comprising a lower rail opening beside the rack of teeth and wherein the guide rail in its internal cavity is provided with at least one surface essentially perpendicular to the traction plane for receiving guide members and a number of substantially vertical support surfaces for the engagement with the guide members.

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7. A staircase lift according to any of the preceding claims, wherein the guide member is slide shoe member.

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8. A staircase lift according to any of the claims 1 to 6, wherein the carrier frame has a roller.

9. A staircase lift according to any of the preceding claims, wherein the guide members are slide shoe members.

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10. A staircase lift according to any of the claims 1 to 8, wherein the guide members are guide rollers.

11. A staircase lift according to any of the preceding claims, wherein the guide pinion wheel are substantially circular in the cross-section and the rack and pinion rail displays a row of correspondingly shaped circular holes.

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12. A staircase lift according to any of the preceding claims, wherein the cross-section of the guide rail is curved in one or more planes.

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13. A staircase lift according to any of the preceding claims, wherein the staircase lift further includes a supporting guide rail mounted parallelly to the first guide rail.
14. A staircase lift according to any of the preceding claims, wherein the carrier
5 frame is provided with a platform adapted to accommodate a wheelchair.
15. A staircase lift according to any of the preceding claims, wherein the carrier frame is provided with a foldable seat.
- 10 16. A staircase lift according to any of the preceding claims, wherein the guide rail is provided with at least one power conductor rail and the carrier frame is provided associated contact members for providing power to an electrical motor of the drive means.
- 15 17. A staircase lift according to claim 16, wherein one or more further conductor rails and associated contact members are arranged for a lift control panel provided on the carrier frame.
18. A moveable carrier frame for use in a staircase lift according to any of the
20 preceding claims.
19. A guide rail for use in a staircase lift according to any of the claims 1 to 14, said guide rail including a generally reverse U-shape comprising a bottom rail opening beside a groove for receiving a rack for cooperating with a pinion drive wheel, and
25 wherein the guide rail in its internal cavity is provided with at least one support surface essentially perpendicular to the traction plane for receiving one or more carrier members and a number of substantially vertical support surfaces for receiving engagement with a number of guide members.
- 30 20. A guide rail according to claim 19, wherein the guide rail is provided with side mounting means.

21. A guide rail according to claim 19 or 20, wherein the guide rail is provided with an upper and a lower set of guide member support surfaces, each set having opposite surfaces.
- 5 22. A guide rail according to claim 19 or 20, wherein the guide rail is provided with an upper guide member support surface facing towards the side mounting means and a second lower guide member support surface facing away from the side mounting means, and wherein the lateral distance between the side mounting means and the carrier member support surface is smaller than the distance between the side
10 mounting means and the lower guide member support surface which again is smaller than the distance between the side mounting means and the upper guide member support surface.
23. A guide rail according to any of the claims 19 to 22, wherein the guide rail is
15 provided with at least one power conductor rail and the carrier frame is provided associated electric contact members for providing power to driving a suspended carrier frame.
24. A guide rail according to claim 23, wherein one or more further conductor rails
20 and associated contact members are arranged for a lift control panel provided on the carrier frame.
25. A guide rail according to any of the claims 19 to 26, wherein said guide rail is an aluminium profile.
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26. A guide rail according to claim 25, wherein the aluminium profile is provided with a surface treatment, such as a coloured surface, preferably by being anodised.